

CLAIMS

1. A pressure vessel liner comprising a tubular trunk and head plates for closing respective opposite end openings of the trunk, the trunk having a reinforcing member fixedly provided therein and extending longitudinally of the trunk for dividing interior of the trunk into a plurality of spaces, the head plates being joined to the reinforcing member.
2. A pressure vessel liner according to claim 1 wherein the combined length of joints between each of the head plates and the reinforcing member is at least 60% of the combined length of portions of the reinforcing member in contact with an inner surface of the head plate.
3. A pressure vessel liner according to claim 1 wherein the head plates are joined to the reinforcing member by friction agitation.
4. A pressure vessel liner according to claim 1 wherein the head plates are formed separately from the trunk and are joined respectively to opposite ends of the trunk.
5. A pressure vessel liner according to claim 1 wherein one of the head plates is formed integrally with one end of the trunk and the other head plate is formed separately from the trunk and joined to the other end of the trunk.
6. A pressure vessel liner according to claim 1 wherein at least one of the head plates is in the form of an outwardly bulging dome, and an end portion of the reinforcing member adjacent to the domelike head plate projects outward beyond the trunk and fitted in the domelike head plate.
7. A pressure vessel liner according to claim 1 wherein

at least one of the head plates has a flat inner surface.

8. A process for fabricating a pressure vessel liner according to claim 1 including extruding a tubular trunk having opposite open ends and a reinforcing member extending 5 longitudinally of the trunk and forming two head plates, inserting the reinforcing member into the trunk and joining the trunk to the reinforcing member, and joining the two head plates respectively to the opposite ends of the trunk and joining the two head plates to the reinforcing member.

10 9. A process for fabricating a pressure vessel liner according to claim 8 wherein the trunk is joined to the reinforcing member by friction agitation from outside the trunk.

10. A process for fabricating a pressure vessel liner according to claim 8 wherein one of the head plates is formed 15 by forging and an outwardly extending projection is formed on an outer surface of said one head plate integrally therewith when said one head plate is formed by forging, and which includes providing a mouthpiece portion by forming a through bore extending from an outer end face of the projection to an inner 20 surface of said one head plate after joining the two head plates respectively to the opposite ends of the trunk and joining the two head plates to the reinforcing member.

11. A process for fabricating a pressure vessel liner according to claim 8 wherein the head plates are joined to 25 the reinforcing member by friction agitation from outside the head plates.

12. A process for fabricating a pressure vessel liner according to claim 1 including extruding a tubular trunk having

opposite open ends and a reinforcing member extending longitudinally of the trunk and dividing interior of the trunk into a plurality of spaces in the form of an integral assembly and forming two head plates, and joining the two head plates 5 respectively to the opposite ends of the trunk and joining the two head plates to the reinforcing member.

13. A process for fabricating a pressure vessel liner according to claim 12 wherein one of the head plates is formed by forging and an outwardly extending projection is formed 10 on an outer surface of said one head plate integrally therewith when said one head plate is formed by forging, and which includes providing a mouthpiece portion by forming a through bore extending from an outer end face of the projection to an inner surface of said one head plate after joining the two head plates 15 respectively to the opposite ends of the trunk and joining the two head plates to the reinforcing member.

14. A process for fabricating a pressure vessel liner according to claim 12 wherein the head plates are joined to the reinforcing member by friction agitation from outside the 20 head plates.

15. A process for fabricating a pressure vessel liner according to claim 1 including forming a tubular trunk having opposite open ends and a head plate for closing one of the open ends of the trunk by forging in the form of an integral 25 assembly, forming a head plate for closing the other open end of the trunk, extruding a reinforcing member extending longitudinally of the trunk, inserting the reinforcing member into the trunk and joining the trunk to the reinforcing member,

and joining the head plate formed separately from the trunk to the other end of the trunk and joining the two head plates to the reinforcing member.

16. A process for fabricating a pressure vessel liner
5 according to claim 15 wherein when the integral assembly of the trunk and the head plate is formed by forging, an outwardly extending projection is formed on an outer surface of the head plate integrally therewith, and which includes providing a mouthpiece portion by forming a through bore extending from
10 an outer end face of the projection to an inner surface of the head plate after joining the head plate formed separately from the trunk to the other end of the trunk and joining the two head plates to the reinforcing member.

17. A process for fabricating a pressure vessel liner
15 according to claim 15 wherein the head plate for closing the other open end of the trunk is formed by forging, and an outwardly extending projection is integrally formed on an outer surface of the head plate to be formed by forging, and which includes providing a mouthpiece portion by forming a through bore
20 extending from an outer end face of the projection to an inner surface of the head plate after joining the head plate formed separately from the trunk to the other end of the trunk and joining the two head plates to the reinforcing member.

18. A process for fabricating a pressure vessel liner
25 according to claim 15 wherein the trunk is joined to the reinforcing member by friction agitation from outside the trunk.

19. A process for fabricating a pressure vessel liner according to claim 15 wherein the head plates are joined to

the reinforcing member by friction agitation from outside the head plates.

20. A pressure vessel comprising a pressure vessel liner according to any one of claims 1 to 7 which is covered with 5 a fiber reinforced resin layer over an outer peripheral surface thereof.

21. A fuel cell system comprising a fuel hydrogen pressure vessel, a fuel cell and pressure piping for delivering fuel hydrogen gas from the pressure vessel to the fuel cell 10 therethrough, the fuel hydrogen pressure vessel comprising a pressure vessel according to claim 20.

22. A fuel cell motor vehicle having installed therein a fuel cell system according to claim 21.

23. A cogeneration system comprising a fuel cell system 15 according to claim 21.

24. A natural gas supply system comprising a natural gas pressure vessel and pressure piping for delivering natural gas from the pressure vessel therethrough, the natural gas pressure vessel being a pressure vessel according to claim 20. 20.

25. A cogeneration system comprising a natural gas supply system according to claim 24, a generator and a generator drive device.

26. A natural gas motor vehicle comprising a natural gas supply system according to claim 24 and an engine for use with natural gas as a fuel. 25